

1. Course Description

COURSE DESCRIPTION FORM																											
Course Code and Title	CHE325 Environmental Chemistry																										
Course Semester	5																										
Catalog Description (Content) of the Course	Scope of Environmental Chemistry. Discussion of Important Relevant Concepts of Chemistry and Introduction of Basic Environmental Concepts. Acid-Base Chemistry and Its Significance in Environmental Chemistry. Dissolution and Chemical Precipitation Chemistry, Chemical Precipitation Reactions in Water and Wastewater Treatment. Coordination Chemistry, Oxidation and Reduction Chemistry and Its Environmental Chemistry Application.																										
Main Textbook	Sawyer, C.N., Mc Carty, P.L., "Chemistry For Sanitary Engineers", 2 nd Ed., Mc Graw- Hill Book Company, New York, 1967.																										
Supporting Textbooks	Stumm, W., Morgan, J.J.," Aquatic Chemistry", Wiley Interscience, New York, 1970.																										
Course Credit (ECTS)	3																										
Prerequisites of the Course (Compulsory attendance should be indicated here.)	There is no prerequisite or co-requisite for this course.																										
Type of the Course	Technical Elective																										
Instruction Language of the Course	English																										
Object and Target of the Course	In Water and Wastewater Treatment to Gain Knowledge About Importance of Chemistry and Applications.																										
Learning Outcomes of the Course	Learning of Basic Environmental Chemistry Concepts. Better Understanding of Chemical Methods Used In Water and Wastewater Practice.																										
Mode of Delivery																											
Weekly Schedule of the Course	<table border="1"> <thead> <tr> <th>Week</th> <th>Subject</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Scope of Environmental Chemistry</td> </tr> <tr> <td>2</td> <td>Introduction of Basic Environmental Chemistry Concepts</td> </tr> <tr> <td>3</td> <td>Acid and Base Chemistry and Its Significance in Environment.</td> </tr> <tr> <td>4</td> <td>Acid Base Chemistry and Its Application In Water Treatment</td> </tr> <tr> <td>5</td> <td>Dissolution and Precipitation Chemistry</td> </tr> <tr> <td>6</td> <td>Dissolution and Precipitation Chemistry</td> </tr> <tr> <td>7</td> <td>Chemical Precipitation Reactions in Water and Wastewater Treatment</td> </tr> <tr> <td>8</td> <td>Coordination Chemistry</td> </tr> <tr> <td>9</td> <td>Oxidation and Reduction Reactions</td> </tr> <tr> <td>10-11</td> <td>Oxidation and Reduction Reactions and Their Applications</td> </tr> <tr> <td>12</td> <td>Oxidation and Reduction Reactions and Their Applications</td> </tr> <tr> <td>13-14</td> <td>Presentation of Term Papers</td> </tr> </tbody> </table>	Week	Subject	1	Scope of Environmental Chemistry	2	Introduction of Basic Environmental Chemistry Concepts	3	Acid and Base Chemistry and Its Significance in Environment.	4	Acid Base Chemistry and Its Application In Water Treatment	5	Dissolution and Precipitation Chemistry	6	Dissolution and Precipitation Chemistry	7	Chemical Precipitation Reactions in Water and Wastewater Treatment	8	Coordination Chemistry	9	Oxidation and Reduction Reactions	10-11	Oxidation and Reduction Reactions and Their Applications	12	Oxidation and Reduction Reactions and Their Applications	13-14	Presentation of Term Papers
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Educative Activities <i>(Credit will be determined based on the time given for these activities. Should be filled carefully.)</i>	Theoretical Study Hours of Course Per Week Practicing Hours of Course Per Week Reading Searching in Internet and Library Preparing Reports Mid-Term and Studying for Mid-Term Final and Studying for Final																											
Assessment Criteria		Quantity	Total Contribution (%)																									
	Midterm	2	30																									
	Homework	3	10																									
	Assignment	0	0																									
	Projects	1	20																									
	Practice	0	0																									
	Quiz	0	0																									
	Contribution of In-term Studies to Overall Grade		60																									
	Contribution of Final Examination to Overall Grade		40																									
	Attendance																											
Workload of the Course	Activity	Total Week Count	Weekly Duration (in hour)	Total Workload in Semester																								
	Theoretical Study Hours of Course Per Week	14	3	42																								
	Practicing Hours of Course Per Week	0	0	0																								
	Reading	5	2	10																								
	Searching in Internet and Library	5	1	5																								
	Designing and Applying Materials																											
	Preparing Reports	3	2	6																								
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	Mid-Term and Studying for Mid-Term	4	3	12																								
	Final and Studying for Final	2	2	4																								
	Other																											
	Total work load			79																								
	Total work load/25			3,16																								
	ECTS of the course			3																								
Course's Contribution To Program	<table border="1"> <tr> <td>No</td> <td>Program Learning Outcomes</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>1</td> <td>Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.</td> <td></td> <td>x</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Ability to identify, formulate, and solve complex engineering problems; ability</td> <td></td> <td></td> <td>x</td> <td></td> <td></td> </tr> </table>	No	Program Learning Outcomes	1	2	3	4	5	1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.		x				2	Ability to identify, formulate, and solve complex engineering problems; ability			x								
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		to select and apply proper analysis and modeling methods for this purpose.					
	3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.		x			
	4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.	x				
	5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.		x			
	6	Ability to work efficiently in intra-disciplinary teams.			x		
	7	Ability to work efficiently in multi-disciplinary teams;			x		
	8	Ability to work individually.		x			
	9	Ability to communicate effectively in Turkish/English, both orally and in writing; Ability to write effective reports and comprehend written reports, make effective presentations,		x			
	10	prepare design and production reports, give and receive clear and intelligible instructions.			x		
	11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.		x			
	12	Awareness of professional and ethical responsibility.			x		
	13	Information about business life practices such as project management, risk management, and change management.			x		
	14	Information about awareness of entrepreneurship, innovation, and sustainable development.			x		
	15	Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety.		x			
	16	Knowledge about awareness of the legal consequences of engineering solutions.		x			
	17	Knowledge on standards used in engineering practice.		x			
Name of Lecturer(s) and Contact Information	1. Dr. Alpay ŞAHİN asahin@gazi.edu.tr						